



## UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/587,362	09/28/2006	Klaus Endres	P30186	8426
7055 7590 04/08/2011 GREENBLUM & BERNSTEIN, P.L.C. 1950 ROLAND CLARKE PLACE RESTON, VA 20191				
EXAMINER				
LI, AIQUN				
ART UNIT		PAPER NUMBER		
1763				
NOTIFICATION DATE		DELIVERY MODE		
04/08/2011		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

gbpatent@gbpatent.com

pto@gbpatent.com

### Office Action Summary

**Application No.**

10/587,362

**Applicant(s)**

ENDRES ET AL.

**Examiner**

AIQUN LI

**Art Unit**

1763

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 February 2011.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 11-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-912)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 12/13/2010
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. Claims 11-32 are pending as amended on 22 February 2011.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
3. Applicant's amendments to the claims and the remarks/arguments filed 22 February 2011 have been entered and fully considered.

### ***Information Disclosure Statement***

4. The information disclosure statement (IDS) submitted on 22 February 2011 was filed after the mailing date of the first Office action on 30 August 2010. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

### ***Response to Amendment and Arguments***

5. Applicant's amendment to independent claim 11, requiring one of the one or more organosilanes being an arylsilane, distinguishes from US Patent 4746366 (Philipp). The anticipatory rejection over Phillip has been withdrawn.
6. Applicant's arguments have been fully considered but are moot in view of the new grounds of rejection as detailed below.

***Double Patenting***

7. **Claims 11, 17-24 and 28-29** are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 2, 4, 5, 10-12, 14-15, 23, 24, 26, 28, 31-33 of US Patent 7825074. Although the conflicting claims are not identical, they are not patentably distinct from each other. For example, the instant claims 11, 17-24 of the instant application recites the same composition limitation as the patented claims while the patented claims differ in specifying a process of use the composition and the amount of the individual components; claims 28-29 of the instant application recites the same process of consolidating a geological formation as the patented claims while the patented claims differ in specifying elevated temperature and pressure and therefore anticipates the instant claims.

8. Claims 11-27 and 31-32 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 34, 37, 49-51, 54-57, 59, 62-64 and 67-72 of copending Application No. 11721201. Although the conflicting claims are not identical, they are not patentably distinct from each other because they both drawn to the same consolidating agent and molded articles while the copending claims specifying the amount of the individual components and coating temperature and pressure therefore anticipates the instant claims.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

***Claim Rejections - 35 USC § 112***

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. The following is a quotation of the third and fourth paragraphs of 35 U.S.C. 112:

A claim may be written in independent or, if the nature of the case admits, in dependent or multiple dependent form.

Subject to the following paragraph, a claim in dependent form shall contain a reference to a claim previously set forth and then specify a further limitation of the subject matter claimed. A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers.

11. **Claims 12-16 and 19-22** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 12, 14, 15, 19 and 20 improperly recite the Markush group in the form of "selected from A, B and C", which renders the claim indefinite because it is unclear which members of the group are part of the claimed invention. A proper Markush groups may be recited as "...selected from the group consisting of A, B and C" or "...selected from A, B or C." See MPEP § 2173.05(h).

12. **Claims 14-16** are rejected under 35 USC 112, fourth paragraph, as being of improper dependent form for failing to include all the limitations of claim 11 and to

further limit the subject matter of claim 11. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim 11 requires at least one of the R being aryl groups, however, claim 14 requires R being alkyl or aryl groups, and claim 15 excludes aryl groups. Therefore Claims 14 and 15 fails to include all the limitation of claim 11 and to further limit claim 11. Claim 16 depends from claim 15.

***Claim Rejections - 35 USC § 102***

13. **Claims 11-17, 19-27 and 31-32** are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 5734000 (Popall).

Regarding claims 11-13, Popall teaches a silicon based lacquer obtained by precondensation and hydrolysis of : at least one compound of the formula  $\text{SiR}_4$ , wherein R is halogen, hydroxyalkoxy, acyloxy (col. 3, line 25-35), exemplified as tetraethoxysilane, which meets the instantly claimed formula (II) and C2 alkoxy group; at least one organic silane of the formula  $\text{R}''_p\text{SiX}_{4-p}$ , wherein R'' is alkyl, alkenyl, aryl, alkylaryl, alkenylaryl, etc., X is hydroxyl, halogen, alkoxy, acyloxy, p is 1, 2 or 3 (col. 3, line 35-58), which meets the instantly claimed formula (I). Popall exemplifies the lacquer comprising diphenylsilanediol being clear (Example 1, col.10, line 60-65), which meets the limitation of particle-free.

Regarding claims 14-16, Popall discloses that the alkyl group is preferably containing 1 to 4 carbon atoms including methyl and ethyl (col.4, line 20-25), aryl group

is preferably being phenyl(col.4, line 25-30) , which meets the instantly claimed R radicals.

Regarding claim 17, Popall discloses that the lacquer is obtained by precondensation and hydrolysis of an arylsilane (col.5, line 64-65 and claim 24), tetraethoxysilane (col.4, line 60-65 and claim 21), which meets the limitation of an orthosilicic ester, and an organic silane of formula  $R''_m(R'''Y)_nSiX_{(4-m-n)}$  wherein m and n are integers from 0 to 3 (col.3, line 35-50 and claim 18), which meets the limitation of an alkylsilane when n is 0 and R'' is alkyl.

Regarding claims 19-22, Popall discloses that the lacquer is prepared in the presence of at least one metal oxide soluble in the reaction medium of main groups Ia to Va or subgroups IVb or Vb of the periodic table (col.3, line 60-65) including Na, K, B, Al, Sn in the form of hydroxide or alcoholate such as NaOR, KOR, or Al (OR)<sub>3</sub>, which meets the instantly claimed formula (II) and metal compounds.

Regarding claims 23 and 24, Popall teaches the preparation may be carried out in the presence of acidic or basic catalyst such as hydrochloric acid (col. 6,line 55-60) and exemplifies that a lacquer is prepared with 0.4 mole GLYMO (containing 3 hydrolyzable groups), 0.4 mol MEMO (containing 3 hydrolyzable groups), 0.04 mole TEOS (containing 4 hydrolyzable groups), and 2.37 mole water, which is less than the stoichiometric amount of 2.56 mole calculated by the examiner based on the sum of the hydrolysable groups of GLYMO, MEMO and TEOS, which meet the claimed substoichiometric amount. Popall further discloses that the lacquer may be diluted with

organic solvents (col.7, line 55-60 and col.8, line 10-15), which meets the limitation of a solution.

Regarding claims 25, 27 and 31-32, Popall teaches the lacquer can be mixed with clay, glass fibers, glass flakes, talc (col.7, line 55-65 and Example 8), which meets porous or particulate material, applied to a substrate and then cured (col. 8, line 18-27 and Example 8).

Regarding claim 26, Popall discloses that the lacquer may be obtained by carrying out the precondensation and hydrolysis condensation at two different moments (col. 8, line 1-10), wherein the condensation reaction takes place after addition of water (col. 7, line 20-25 and col. 8, line 5-10).

14. **Claims 11-16 and 23-24** are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 5858280 (Zhang).

Regarding claims 11-16 and 24, Zhang discloses a transparent methyl modified silica gel comprising: hydrolyzing and polycondensate a methyltrialkoxysilane or a mixture of methyltrialkoxo with other trialkoxysilane including phenyltriethoxysilane or tetralkoxysilane such as tetraethoxysilane (col.2, line 15-25), wherein the alkoxy group of the starting silane is preferably a lower alkoxy group such as methoxy, ethoxy (col. 2, line 25-27), and producing a hydrolysate sol exemplified as a clear solution (Examples 1-9 ), which meets the instantly claimed particle free composition.

Regarding claim 23, Zhang discloses that the hydrolysis takes place at an acidic pH (col. 3, line 15-20) with water at an amount represented by water/Si of the starting



alkoxysilane being 1.4 and 2.5 (col.3, line 25-40), which is below the stoichiometric amount of 3 calculated by the examiner based on trialkoxy silane starting material (col.2, line 15-20).

15. **Claims 11-16 and 23-24** are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 4308371 (Tanaka).

Regarding claims 11-16 and 24, Tanaka teaches a thermosetting organopolysiloxane soluble in alcohols, ethers, ketenes or aromatic hydrocarbon solvents (col. 3, line 15-20) in the form of a solution, which meets the limitation of particle-free, can be obtained by hydrolyzing condensation of one or a mixture of two or more alkoxy silanes in the presence of a hydrolyzed partial condensation product of a trialkoxysilane (col. 1, line 10-20 and claim 1) , and exemplifies an organopolysiloxane in the form of a solution obtained by hydrolysis and condensation of methyltriethoxysilane and phenyltriethoxysilane (Example 7), which meets the instantly claimed organosilane, radical X and R.

Regarding claim 23, Tanaka teaches that the organopolysiloxane is prepared with water (4-a)/2 mole per (4-a) mole of hydrolysable groups (col. 3, line 53-65), which meets the limitation of substoichiometric amount of water.

***Claim Rejections - 35 USC § 103***

16. **Claim 27** is rejected under 35 USC 102(b) as being anticipated by or, in the alternative, under 35 USC 103(a) as being unpatentable over US Patent 6287639 B1 (Schmidt 639).

Schmidt' 639 teaches a consolidated molded article (col. 5, line 30-40, and Examples 3, 6, 7, 12) prepared by contacting/mixing a substrate including sands and clays (col. 1, line 25-30 and col.2, line 11-13) with a hydrolysate and condensate of organic silanes containing colloidal inorganic particles (col. 1, line 5-20) including phenyltriethoxysilane (col.3, line 30 and col.5, line 50-55) and thereafter curing the silane composition (col. 1, line 5-25).

If there is any difference between the product of Schimt'639 and the product of the instant claim(s) the difference would have been minor and obvious since the consolidated articles are not particle-free and process defined by claim 25 does not exclude particles.

Claim 27 is viewed as product-by-process claims and hence the methods they are created by are not pertinent, unless applicant can show a different product is produced. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." See MPEP 2113.

"There is nothing inconsistent in concurrent rejections for obviousness under 35 USC 103 and for anticipation under 35 USC 102." See MPEP 2112(III).

17. **Claim 17 and 18** are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka.

The teachings of Tanaka are detailed in the rejection under 35 USC 102(b) of claims 11-16 and 23-24 above.

Tanaka further discloses that the alkoxysilane includes methyltriethoxysilane, phenyltriethoxysilane and tetraethoxysilane (col.3, line 1-5), and exemplifies the combination of methyltriethoxysilane and phenyltriethoxysilane (Example 7). Therefore a mixture of two or more alkoxysilane (col. 1, line 5-10) has a finite number of combinations given the short list of alkoxysilane and the requirement of a catalytic trialkoxy silane (col. 1, line 10-20 and claim1) . At the time the invention was made it would have been obvious for a person of ordinary skill to try the combination of methyltriethoxysilane, phenyltriethoxysilane and tetraethoxysilane in the composition of Tanaka with reasonable expectation of success since Tanaka exemplifies the combination of methyltriethoxysilane and phenyltriethoxysilane and discloses tetraethoxysilane.

18. **Claim 30** is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 6513592 B2 (Espin'592) in view of Schmidt'639.

Espin'592 teaches a process for consolidating sand formations (claim1) comprises injecting a consolidation system into the formation ( col.2, line 47-48, and claim 1) and curing thereof ( col. 3, line 30), wherein the consolidation system including nanoparticles disclosed in PCT/EP97/06370 (col. 3, line 11-19), of which Schmidt'639 is the English equivalent, which are particles comprising hydrolysate and condensate of organosilanes including phenyltriethoxysilane as detailed in the rejection under 35 USC 102(b)/103(a) of claim 27 above.

At the time of the invention it would have been obvious for a person of ordinary skill in the art to inject the consolidated article of Schmidt'639 into the formation and curing thereof for the benefit of consolidating sand formations because Espin'592 expressly teaches the use of the composition of PCT/EP97/06370 (Espin'592, col. 3, line 18-19), of which Schmidt'639 is the English equivalent.

***Allowable Subject Matter***

19. **Claims 28-29** would be allowable provided a terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) is timely filed to overcome the rejection based on a nonstatutory double patenting ground set forth in this Office action.

20. The following is an examiner's statement of reasons for allowance:

US Patent 6513592 (Espin'592), US Patent 5734000 (Popall), US Patent 5858280 (Zhang) and US Patent 4308371 (Tanaka) are the closest prior art of record.

Espin'592 discloses a process for consolidating sand formations by injecting nanoparticles modified by silanes but are silent on injection of a particle-free consolidating agent.

Popall, Zhang and Tanaka teach the particle free organosilanes but are silent on the process for consolidating sand formation with the organosilanes.

None of Espin'592, Popall, Zhang or Tanaka teaches or fairly suggests a process of using a particle-free consolidating agent comprising the instantly claimed organosilanes to consolidate a geological formation.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AIQUN LI whose telephone number is (571)270-7736. The examiner can normally be reached on Monday -Thursday, 8:00 am - 4:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Milton Cano can be reached on (571)2721398. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. L./  
Examiner, Art Unit 1763

/Timothy J. Kugel/  
Primary Examiner, Art Unit 1765